CIVIL AIM CONSULTANTS & ENGINEERS

(Building Geo-Tech & Highway Materials Testing Laboratory)

An ISO 9001-2015 Certified Company

NABL Accredited As Per ISO/IEC 17025:2017 Laboratory

JobNo: CACE/BBMP/MSV/W.No.14/2021-22 Date : 05.04.2022

TEST RESULTS OF AGGREGATE SHAPE TEST (Flakiness & Elongation)

Client : **Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.**

Agency : **M/S M S V Construction Company, Contractor, Bangalore.**

Name of work : Entrustment of work "Asphalting to roads at Munikondappa Layout and Surrounding area in ward no.14 Bagalagunte", BBMP, Bangalore.

BIS Code : IS 2386 Part (1):1963

Date of Test : 05.04.2022

Type of Mix : Dense Graded Bituminous Macadam

Sl.No.	Flakiness Index Value(%)	Elongation Index Value(%)	Total(Combined Flakiness and Elongation)(%)	Requirements
1	12.50	13.20	25.70	Maximum allowable Combined Flakiness and Elongation Indices for Dense Graded Bituminous Macadam is 35% as per Table 500.8 MORTH Specification.
2	12.90	13.30	26.20	

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For CIVIL AIM CONSULTANTS & ENGINEERS

Authorised Signatory

No. 01, Satvika Nilaya, Opp. Widia Poorna Prajna School,
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Date: 05.04.2022

Job No.: CACE/BBMP/MSV/W.No.14/2021-22

Aggregate Gradation Test

Client	**Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.**
Agency	**M/S M S V Construction Company, Contractor, Bangalore.**
Name of the Work	Entrustment of work "Asphalting to roads at Munikondappa Layout and Surrounding area in ward no.14 Bagalagunte", BBMP, Bangalore.
BIS Code	IS 2386(Part 1):1963(RA 2011)
Sample I / D	Hot mix Plant, Bangalore.
Type of Mix	Dense Graded Bituminous Macadam
Date of Testing	05.04.2022

Total Weight of Sample: **10000** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Requirement as per MORTH table 500.10	Remarks
37.50	0	0.0	0	100	100	Gradation satisfies Grade-II MORTH specification
26.50	717	7.2	7.17	92.83	90 - 100	
19.00	1260	12.6	19.77	80.23	71 - 95	
13.20	1375	13.8	33.52	66.48	56 - 80	
4.75	2505	25.1	58.57	41.43	38 - 54	
2.36	1320	13.2	71.77	28.23	28 - 42	
0.300	1315	13.2	84.92	15.08	7 - 21	
0.075	1155	11.6	96.47	3.53	2 - 8	

Total Weight of Sample: **10000** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Requirement as per MORTH table 500.10	Remarks
37.5	0	0.0	0	100	100	Gradation satisfies Grade-II MORTH specification
26.5	685	6.9	6.85	93.15	90 - 100	
19	1425	14.3	21.10	78.90	71 - 95	
13.2	1155	11.6	32.65	67.35	56 - 80	
4.75	2425	24.3	56.90	43.10	38 - 54	
2.360	1171	11.7	68.61	31.39	28 - 42	
0.300	1321	13.2	81.82	18.18	7 - 21	
0.075	1181	11.8	93.63	6.37	2 - 8	

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JobNo: CACE/BBMP/MSV/W.No.14/2021-22 Date : 05.04.2022

TEST RESULTS OF AGGREGATE IMPACT VALUE

Client : **Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.**

Agency : **M/S M S V Construction Company, Contractor, Bangalore.**

Name of work : Entrustment of work "Asphalting to roads at Munikondappa Layout and Surrounding area in ward no.14 Bagalagunte", BBMP, Bangalore.

Source / Location : Hot Mix Plant, Bangalore

BIS Code : IS 2386 Part (4):1963

Type of Mix : Dense Graded Bituminous Macadam

Date of test : 05.04.2022

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W1 g	384	386	
2	Weight of agregate passing 2.36 mm sieve after the test = W2 g	89	90	
3	Weight of aggregate retained 2.36 mm sieve after the test = W3 g	295	296	
5	Aggregate Impact value = percent fines 100* (W2/W1) percent	23.18	23.32	**23.25**

Comments:

→ Maximum allowable Aggregate Impact value for Dense Graded Bituminous Macadam is 27% (Table 500-8 of MORTH specification)

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Job No: CACE/BBMP/MSV/W.No.14/2021-22

Date: **05.04.2022**

TEST REPORT ON PAVING BITUMEN

Client	**Assistant Executive Engineer,** Dasarahalli Sub Division, BBMP, Bangalore.
Agency	M/S **M S V Construction Company,** Contractor, Bangalore.
Name of work	Entrustment of work "Asphalting to roads at Munikondappa Layout and Surrounding area in ward no.14 Bagalagunte", BBMP, Bangalore.
BIS Code	IS 73:2013,IS 1203:1978, IS 1208:1978, IS 1205:1978, IS1448(P-69):1969
Date of Testing	**05.04.2022**
Type of Mix	**Dense Graded Bituminous Macadam , VG 30**
Source of Location	**Hot Mix Plant**

The results of the tests conducted on the bitumen sample using for Dense Graded Bituminous Macadam

Sl.No	Description	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 0C, 100gms, 5sec, 1/10 mm	51	Min 45
2	Softening point, 0C	49	Min 47
3	Ductility at 250C, cm	>100	Min40
4	Flash Point, 0C	270	Min 220

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Job No.: CACE/BBMP/MSV/W.No.14/2021-22 Date: 07.04.2022

Specific Gravity And Water Absorption Test

Client	**Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.**
Agency	**M/S M S V Construction Company, Contractor, Bangalore.**
Name of the Work	Entrustment of work "Asphalting to roads at Munikondappa Layout and Surrounding area in ward no.14 Bagalagunte", BBMP, Bangalore.
BIS Code	IS 2386(Part 3):1963
Type of Mix	Dense Graded Bituminous Macadam
Date of Testing	05.04.2022 to 07.04.2022

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2024	2022	2025	
2	Weight of basket suspended in water	W_2 g	757	758	756	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1267	1264	1269	
4	Weight of saturated surface dry aggregate in air	W_3 g	2017	2016	2015	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	750	752	746	
6	Weight of oven dried aggregate	W_4 g	2007	2007	2005	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.676	2.669	2.688	2.678
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.712	2.701	2.724	2.713
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.50%	0.45%	0.50%	0.48%

Comments:

→ Maximum allowable Aggregate Water absorption value for Dense Graded Bituminous Macadam is 2.0%(As per MORTH table 500.8)

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Job No.: CACE/BBMP/MSV/W.No.14/2021-22 Date: 08.04.2022

TEST REPORT ON STABILITY OF MIX

Client	:	**Assistant Executive Engineer,** Dasarahalli Sub Division, BBMP, Bangalore.
Agency	:	M/S **M S V Construction Company,** Contractor, Bangalore.
Name of the Work	:	Entrustment of work "Asphalting to roads at Ashok nagar and Surrounding area in ward no.14 Bagalagunte," BBMP, Bangalore.
Type of Mix	:	Dense Graded Bituminous Macadam
Date of Testing	:	08.04.2022

The results of the tests conducted on the Dense Graded Bituminous Macadam mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshal Stability, Kn	9.26	10.06	9 Kn (min)
2	Marshal flow, mm	3.67	3.75	2 – 4
3	Percent air voids in Mineral Aggregate	13.77	14.30	13 – 15
4	Voids in Compacted Mix	3.80	4.22	3 – 6
5	Percent Voids filled with Bitumen	68.89	69.55	65 - 75
6	Density, g/cc	2.23	2.27	--

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Job No.: CACE/BBMP/MSV/W.No.14/2021-22 Date: 08.04.2022

TEST REPORT ON STABILITY OF MIX

Client	:	**Assistant Executive Engineer,** Dasarahalli Sub Division, BBMP, Bangalore.
Agency	:	M/S **M S V Construction Company,** Contractor, Bangalore.
Name of the Work	:	Entrustment of work "Asphalting to roads at Ashok nagar and Surrounding area in ward no.14 Bagalagunte," BBMP, Bangalore.
Type of Mix	:	Dense Graded Bituminous Macadam
Date of Testing	:	08.04.2022

The results of the tests conducted on the Dense Graded Bituminous Macadam mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshal Stability, Kn	9.30	10.17	9 Kn (min)
2	Marshal flow, mm	3.73	3.56	2 – 4
3	Percent air voids in Mineral Aggregate	13.84	14.40	13 – 15
4	Voids in Compacted Mix	3.89	4.31	3 – 6
5	Percent Voids filled with Bitumen	68.96	69.62	65 - 75
6	Density, g/cc	2.25	2.23	--

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Job No.: CACE/BBMP/MSV/W.No.14/2021-22 Date: 09.04.2022

TEST REPORT ON STABILITY OF MIX

Client	:	**Assistant Executive Engineer,** Dasarahalli Sub Division, BBMP, Bangalore.
Agency	:	M/S **M S V Construction Company,** Contractor, Bangalore.
Name of the Work	:	Entrustment of work "Asphalting to roads at Ashok nagar and Surrounding area in ward no.14 Bagalagunte," BBMP, Bangalore.
Type of Mix	:	Dense Graded Bituminous Macadam
Date of Testing	:	09.04.2022

The results of the tests conducted on the Dense Graded Bituminous Macadam mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshal Stability, Kn	9.40	10.21	9 Kn (min)
2	Marshal flow, mm	3.78	3.81	2 – 4
3	Percent air voids in Mineral Aggregate	13.89	14.45	13 – 15
4	Voids in Compacted Mix	3.94	4.36	3 – 6
5	Percent Voids filled with Bitumen	69.1	69.65	65 - 75
6	Density, g/cc	2.24	2.25	--

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TEST REPORT ON STABILITY OF MIX

Client	:	**Assistant Executive Engineer,** Dasarahalli Sub Division, BBMP, Bangalore.
Agency	:	M/S **M S V Construction Company,** Contractor, Bangalore.
Name of the Work	:	Entrustment of work "Asphalting to roads at Ashok nagar and Surrounding area in ward no.14 Bagalagunte," BBMP, Bangalore.
Type of Mix	:	Dense Graded Bituminous Macadam
Date of Testing	:	09.04.2022

The results of the tests conducted on the Dense Graded Bituminous Macadam mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshal Stability, Kn	9.25	10.12	9 Kn (min)
2	Marshal flow, mm	3.68	4.51	2 – 4
3	Percent air voids in Mineral Aggregate	13.79	14.35	13 – 15
4	Voids in Compacted Mix	3.84	4.26	3 – 6
5	Percent Voids filled with Bitumen	68.91	69.57	65 - 75
6	Density, g/cc	2.25	2.27	--

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Job No.: CACE/BBMP/MSV/W.No.14/2021-22 Date: 11.04.2022

TEST REPORT ON STABILITY OF MIX

Client	:	**Assistant Executive Engineer,** Dasarahalli Sub Division, BBMP, Bangalore.
Agency	:	M/S **M S V Construction Company,** Contractor, Bangalore.
Name of the Work	:	Entrustment of work "Asphalting to roads at Ashok nagar and Surrounding area in ward no.14 Bagalagunte," BBMP, Bangalore.
Type of Mix	:	Dense Graded Bituminous Macadam
Date of Testing	:	11.04.2022

The results of the tests conducted on the Dense Graded Bituminous Macadam mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshal Stability, Kn	9.32	10.19	9 Kn (min)
2	Marshal flow, mm	3.75	3.83	2 – 4
3	Percent air voids in Mineral Aggregate	13.86	14.42	13 – 15
4	Voids in Compacted Mix	3.90	4.33	3 – 6
5	Percent Voids filled with Bitumen	68.97	69.63	65 - 75
6	Density, g/cc	2.25	2.26	--

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Job No.: CACE/BBMP/MSV/W.No.14/2021-22 Date: 08.04.2022

BITUMEN CONTENT AND GRADATION DETERMINATION OF DENSE GRADED BITUMINOUS MACADAM MIX

AASHTO T 164 & AASHTO T 30

Client	**Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore**
Agency	**M/S M S V Construction Company, Contractor, Bangalore.**
Name of the Work	Entrustment of work "Asphalting to roads at Munikondappa Layout and Surrounding area in ward no.14 Bagalagunte", BBMP, Bangalore.
Date of Testing	08.04.2022

BITUMEN CONTENT DETERMINATION

Description	Test 1	Test 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	477.5	477
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	22.50	23.00
7. Bitumen content in %	4.50	4.60
8. Average	**4.55**	

GRADATION AFTER EXTRACTION

SIEVE SIZE	Test 1				Requirement as per MORTH table 500.10
mm	Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	
37.5	0	0	0	100	100
26.5	36.2	36.2	7.6	92.4	90 - 100
19	74.1	110.3	23.1	76.9	71 - 95
13.2	66.5	176.8	37.0	63.0	56 - 80
4.75	75	251.8	52.7	47.3	38 - 54
2.360	90.5	342.3	71.7	28.3	28 - 42
0.300	95.4	437.7	91.7	8.3	7 - 21
0.075	21.5	459.2	96.2	3.8	2 - 8

SIEVE SIZE	Test 2				Requirement as per MORTH table 500.10
mm	Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	
37.5	0	0	0	100	100
26.5	35.2	35.2	7.4	92.6	90 - 100
19	74.3	109.5	23.0	77.0	71 - 95
13.2	66.5	176	36.9	63.1	56 - 80
4.75	84.60	260.6	54.6	45.4	38 - 54
2.360	78.5	339.1	71.1	28.9	28 - 42
0.300	98.3	437.4	91.7	8.3	7 - 21
0.075	23.5	460.9	96.6	3.4	2 - 8

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Job No.: CACE/BBMP/MSV/W.No.14/2021-22 Date: 08.04.2022

BITUMEN CONTENT AND GRADATION DETERMINATION OF DENSE GRADED BITUMINOUS MACADAM MIX
AASHTO T 164 & AASHTO T 30

Client	**Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore**
Agency	**M/S M S V Construction Company, Contractor, Bangalore.**
Name of the Work	Entrustment of work "Asphalting to roads at Munikondappa Layout and Surrounding area in ward no.14 Bagalagunte", BBMP, Bangalore.
Date of Testing	08.04.2022

BITUMEN CONTENT DETERMINATION

Description	Test 1	Test 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	477.5	477.5
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	22.50	22.50
7. Bitumen content in %	4.50	4.50
8. Average	**4.50**	

GRADATION AFTER EXTRACTION

SIEVE SIZE	Test 1				
mm	Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	Requirement as per MORTH table 500.10
37.5	0	0	0	100	100
26.5	39.2	39.2	8.2	91.8	90 - 100
19	74.1	113.3	23.7	76.3	71 - 95
13.2	66.2	179.5	37.6	62.4	56 - 80
4.75	84.9	264.4	55.4	44.6	38 - 54
2.360	76.2	340.6	71.3	28.7	28 - 42
0.300	96.9	437.5	91.6	8.4	7 - 21
0.075	22.3	459.8	96.3	3.7	2 - 8

SIEVE SIZE	Test 2				
mm	Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	Requirement as per MORTH table 500.10
37.5	0	0	0	100	100
26.5	38.5	38.5	8.1	91.9	90 - 100
19	73.5	112	23.5	76.5	71 - 95
13.2	67.8	179.8	37.7	62.3	56 - 80
4.75	84.80	264.6	55.4	44.6	38 - 54
2.360	78.5	343.1	71.9	28.1	28 - 42
0.300	98.6	441.7	92.5	7.5	7 - 21
0.075	25.7	467.4	97.9	2.1	2 - 8

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For CIVIL AIM CONSULTANTS & ENGINEERS

Authorised Signatory

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Job No.: CACE/BBMP/MSV/W.No.14/2021-22 Date: 09.04.2022

BITUMEN CONTENT AND GRADATION DETERMINATION OF DENSE GRADED BITUMINOUS MACADAM MIX

AASHTO T 164 & AASHTO T 30

Client	**Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore**
Agency	**M/S M S V Construction Company, Contractor, Bangalore.**
Name of the Work	Entrustment of work "Asphalting to roads at Munikondappa Layout and Surrounding area in ward no.14 Bagalagunte", BBMP, Bangalore.
Date of Testing	09.04.2022

BITUMEN CONTENT DETERMINATION

Description	Test 1	Test 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	476.5	477
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	23.50	23.00
7. Bitumen content in %	4.70	4.60
8. Average	**4.65**	

GRADATION AFTER EXTRACTION

SIEVE SIZE	Test 1				Requirement as per MORTH table 500.10
mm	Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	
37.5	0	0	0	100	100
26.5	37.5	37.5	7.9	92.1	90 - 100
19	74.1	111.6	23.4	76.6	71 - 95
13.2	65.1	176.7	37.1	62.9	56 - 80
4.75	84.3	261	54.8	45.2	38 - 54
2.360	76.5	337.5	70.8	29.2	28 - 42
0.300	96.1	433.6	91.0	9.0	7 - 21
0.075	21.1	454.7	95.4	4.6	2 - 8

SIEVE SIZE	Test 2				Requirement as per MORTH table 500.10
mm	Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	
37.5	0	0	0	100	100
26.5	38.2	38.2	8.0	92.0	90 - 100
19	73.2	111.4	23.4	76.6	71 - 95
13.2	66.9	178.3	37.4	62.6	56 - 80
4.75	83.50	261.8	54.9	45.1	38 - 54
2.360	78.9	340.7	71.4	28.6	28 - 42
0.300	98.9	439.6	92.2	7.8	7 - 21
0.075	22.3	461.9	96.8	3.2	2 - 8

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BITUMEN CONTENT AND GRADATION DETERMINATION OF DENSE GRADED BITUMINOUS MACADAM MIX

AASHTO T 164 & AASHTO T 30

Client	**Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore**
Agency	**M/S M S V Construction Company, Contractor, Bangalore.**
Name of the Work	Entrustment of work "Asphalting to roads at Munikondappa Layout and Surrounding area in ward no.14 Bagalagunte", BBMP, Bangalore.
Date of Testing	09.04.2022

BITUMEN CONTENT DETERMINATION

Description	Test 1	Test 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	477	477
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	23.00	23.00
7. Bitumen content in %	4.60	4.60
8. Average	**4.60**	

GRADATION AFTER EXTRACTION

SIEVE SIZE	Test 1				Requirement as per MORTH table 500.10
mm	Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	
37.5	0	0	0	100	100
26.5	36.7	36.7	7.7	92.3	90 - 100
19	72.9	109.6	23.0	77.0	71 - 95
13.2	66.8	176.4	37.0	63.0	56 - 80
4.75	83.8	260.2	54.5	45.5	38 - 54
2.360	76.5	336.7	70.6	29.4	28 - 42
0.300	96.2	432.9	90.8	9.2	7 - 21
0.075	21.2	454.1	95.2	4.8	2 - 8

SIEVE SIZE	Test 2				Requirement as per MORTH table 500.10
mm	Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	
37.5	0	0	0	100	100
26.5	39.8	39.8	8.3	91.7	90 - 100
19	73.2	113	23.7	76.3	71 - 95
13.2	66.1	179.1	37.5	62.5	56 - 80
4.75	83.50	262.6	55.1	44.9	38 - 54
2.360	78.2	340.8	71.4	28.6	28 - 42
0.300	91.2	432	90.6	9.4	7 - 21
0.075	21.2	453.2	95.0	5.0	2 - 8

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For CIVIL AIM CONSULTANTS & ENGINEERS

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Job No.: CACE/BBMP/MSV/W.No.14/2021-22

Date: 11.04.2022

BITUMEN CONTENT AND GRADATION DETERMINATION OF DENSE GRADED BITUMINOUS MACADAM MIX

AASHTO T 164 & AASHTO T 30

Client	**Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore**
Agency	**M/S M S V Construction Company, Contractor, Bangalore.**
Name of the Work	Entrustment of work "Asphalting to roads at Munikondappa Layout and Surrounding area in ward no.14 Bagalagunte", BBMP, Bangalore.
Date of Testing	11.04.2022

BITUMEN CONTENT DETERMINATION

Description	Test 1	Test 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	477.5	477.5
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	22.50	22.50
7. Bitumen content in %	4.50	4.50
8. Average	**4.50**	

GRADATION AFTER EXTRACTION

SIEVE SIZE	Test 1				Requirement as per MORTH table 500.10
mm	Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	
37.5	0	0	0	100	100
26.5	33.9	33.9	7.1	92.9	90 - 100
19	73.9	107.8	22.6	77.4	71 - 95
13.2	66	173.8	36.4	63.6	56 - 80
4.75	84	257.8	54.0	46.0	38 - 54
2.360	76	333.8	69.9	30.1	28 - 42
0.300	96.8	430.6	90.2	9.8	7 - 21
0.075	21.6	452.2	94.7	5.3	2 - 8

SIEVE SIZE	Test 2				Requirement as per MORTH table 500.10
mm	Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	
37.5	0	0	0	100	100
26.5	35.4	35.4	7.4	92.6	90 - 100
19	73.4	108.8	22.8	77.2	71 - 95
13.2	66.8	175.6	36.8	63.2	56 - 80
4.75	84.50	260.1	54.5	45.5	38 - 54
2.360	78.6	338.7	70.9	29.1	28 - 42
0.300	98.5	437.2	91.6	8.4	7 - 21
0.075	23.4	460.6	96.5	3.5	2 - 8

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Job No.: CACE/BBMP/MSV/W.No.14/2021-22 Date: 09.04.2022

Aggregate Impact Value

Client	**Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.**
Agency	**M/S M S V Construction Company, Contractor, Bangalore.**
Name of the Work	Entrustment of work "Asphalting to roads at Munikondappa Layout and Surrounding area in ward no.14 Bagalagunte", BBMP, Bangalore.
BIS Code	IS 2386(Part 4):1963
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Bituminous Concrete
Date of Testing	09.04.2022

Sl No.	Details	Test No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	382	383	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	84.5	85.5	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	297.5	297.5	
4	Aggregate Impact value = percent fines 100* (W_2/W_1) percent	22.12	22.32	**22.22**

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Concrete is 24%(MORTH table no.500.16)

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Date : 09.04.2022

Job No.: CACE/BBMP/MSV/W.No.14/2021-22

Aggregate Gradation Test

IS : 2386 Part I

Client	**Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.**
Agency	**M/S M S V Construction Company, Contractor, Bangalore.**
Name of the Work	Entrustment of work "Asphalting to roads at Munikondappa Layout and Surrounding area in ward no.14 Bagalagunte", BBMP, Bangalore.
BIS Code	IS 2386(Part 1):1963
Sample I / D	Hot Mix Plant, Bangalore
Type of Mix	Bituminous Concrete
Date of Testing	09.04.2022

Total Weight of Sample: **5000** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Requirement as per MORTH table 500.17	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per MORTH
13.2	416	8.32	8.32	91.68	90 - 100	
9.5	475	9.50	17.82	82.18	70 - 88	
4.75	640	12.80	30.62	69.38	53 - 71	
2.36	687	13.74	44.36	55.64	42 - 58	
1.18	521	10.42	54.78	45.22	34 - 48	
0.600	548	10.96	65.74	34.26	26 - 38	
0.300	491	9.82	75.56	24.44	18 - 28	
0.150	367	7.34	82.90	17.10	12 - 20	
0.075	489	9.78	92.68	7.32	4 - 10	

Total Weight of Sample: **5000** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Requirement as per MORTH table 500.17	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per MORTH
13.2	420	8.40	8.40	91.60	90 - 100	
9.5	549	10.98	19.38	80.62	70 - 88	
4.75	682	13.64	33.02	66.98	53 - 71	
2.36	533	10.66	43.68	56.32	42 - 58	
1.18	559	11.18	54.86	45.14	34 - 48	
0.600	546	10.92	65.78	34.22	26 - 38	
0.300	682	13.64	79.42	20.58	18 - 28	
0.150	198	3.96	83.38	16.62	12 - 20	
0.075	482	9.64	93.02	6.98	4 - 10	

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Job No.: CACE/BBMP/MSV/W.No.14/2021-22 Date: 09.04.2022

TEST REPORT

Client	:	**Assistant Executive Engineer,** Dasarahalli Sub Division, BBMP, Bangalore.
Agency	:	M/S **M S V Construction Company,** Contractor, Bangalore.
Name of the work	:	Entrustment of work "Asphalting to roads at Munikondappa Layout and Surrounding area in ward no.14 Bagalagunte", BBMP, Bangalore.
IS Code	:	IS 73:2013, IS 1203:1978(RA 2008), IS 1205:1978(RA 2009), IS 1208:1978(RA 2009), IS 1209:1978(RA 2009)
Source of location	:	Hot mix Plant, Bangalore, VG 30
Date of testing	:	09.04.2022

The results of the tests conducted on the bitumen sample using for Bituminous Concrete

Sl. No	Description	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 ^{0}C, 1/10 mm	49	Min 45
2	Softening point, ^{0}C	52	Min. 47
3	Ductility at 27^{0}C, cm	> 100	Min. 40
4	Flash Point, ^{0}C	276	Min. 220

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Job No.: CACE/BBMP/MSV/W.No.14/2021-22 Date : 09.04.2022

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.**
Agency	**M/S M S V Construction Company, Contractor, Bangalore.**
Name of Work	Entrustment of work "Asphalting to roads at Munikondappa Layout and Surrounding area in ward no.14 Bagalagunte", BBMP, Bangalore.
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Bituminous Concrete
Date of Testing	09.04.2022

Sl no	Test	1	2	Requirements as per MORTH 5th edition table no 500.16
1	Flakiness Index	12.1	12.5	Combined Flakiness & Elongation index Max 35%
2	Elongation Index	13.2	13.1	
	Combined Flakiness & Elongation index	25.30	25.60	

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Job No.: CACE/BBMP/MSV/W.No.14/2021-22 Date : 11.04.2022

Specific Gravity And Water Absorption Test

Client	**Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.**
Agency	**M/S M S V Construction Company, Contractor, Bangalore.**
Name of the Work	Entrustment of work "Asphalting to roads at Munikondappa Layout and Surrounding area in ward no.14 Bagalagunte", BBMP, Bangalore.
BIS Code	IS 2386(Part 3):1963
Type of Mix	Bituminous Concrete
Date of Testing	09.04.2022 to 11.04.2022

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2022	2023	2026	
2	Weight of basket suspended in water	W_2 g	753	755	756	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1269	1268	1270	
4	Weight of saturated surface dry aggregate in air	W_3 g	2016	2018	2020	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	747	750	750	
6	Weight of oven dried aggregate	W_4 g	2010	2011	2012	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.691	2.681	2.683	2.685
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.713	2.707	2.712	2.710
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.30%	0.35%	0.40%	0.35%

Comments:

→ Maximum allowable Aggregate Water absorption value for Bituminous Concrete is 2.0%(MORTH table 500.16)

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Job No.: CACE/BBMP/MSV/W.No.14/2021-22 Date: 12.04.2022

TEST REPORT ON STABILITY OF MIX

Client	:	**Assistant Executive Engineer,** Dasarahalli Sub Division, BBMP, Bangalore.
Agency	:	M/S **M S V Construction Company,** Contractor, Bangalore.
Name of the Work	:	Entrustment of work "Asphalting to roads at Munikondappa Layout and Surrounding area in ward no.14 Bagalagunte", BBMP, Bangalore.
Source of location	:	Hot mix Plant, Bangalore
Type of Mix	:	Bituminous Concrete
Date of Testing	:	12.04.2022

The results of the tests conducted on the Bituminous Concrete mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshal Stability, Kn	10.23	9.54	9 Kn (min)
2	Marshal flow, mm	3.65	2.34	2 – 4
3	Percent air voids in Mineral Aggregate	13.43	14.55	13 – 15
4	Voids in Compacted Mix	3.71	4.5	3 – 6
5	Percent Voids filled with Bitumen	70.4	71..10	65 - 75
6	Density, g/cc	2.23	2.26	--

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Job No.: CACE/BBMP/MSV/W.No.14/2021-22 Date: 12.04.2022

TEST REPORT ON STABILITY OF MIX

Client	:	**Assistant Executive Engineer,** Dasarahalli Sub Division, BBMP, Bangalore.
Agency	:	M/S **M S V Construction Company,** Contractor, Bangalore.
Name of the Work	:	Entrustment of work "Asphalting to roads at Munikondappa Layout and Surrounding area in ward no.14 Bagalagunte", BBMP, Bangalore.
Source of location	:	Hot mix Plant, Bangalore
Type of Mix	:	Bituminous Concrete
Date of Testing	:	12.04.2022

The results of the tests conducted on the Bituminous Concrete mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshal Stability, Kn	9.55	10.82	9 Kn (min)
2	Marshal flow, mm	2.55	2.56	2 – 4
3	Percent air voids in Mineral Aggregate	13.44	14.25	13 – 15
4	Voids in Compacted Mix	3.89	4.51	3 – 6
5	Percent Voids filled with Bitumen	69.33	69.88	65 - 75
6	Density, g/cc	2.21	2.23	--

Note:

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For CIVIL AIM CONSULTANTS & ENGINEERS

Authorised Signatory

No. 01, Satvika Nilaya, Opp. Widia Poorna Prajna School,
Ramaiah Layout, Nagasandra, Bangalore - 560 073.
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Job No.: CACE/BBMP/MSV/W.No.14/2021-22 Date: 13.04.2022

TEST REPORT ON STABILITY OF MIX

Client	:	**Assistant Executive Engineer,** Dasarahalli Sub Division, BBMP, Bangalore.
Agency	:	M/S **M S V Construction Company,** Contractor, Bangalore.
Name of the Work	:	Entrustment of work "Asphalting to roads at Munikondappa Layout and Surrounding area in ward no.14 Bagalagunte", BBMP, Bangalore.
Source of location	:	Hot mix Plant, Bangalore
Type of Mix	:	Bituminous Concrete
Date of Testing	:	13.04.2022

The results of the tests conducted on the Bituminous Concrete mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshal Stability, Kn	9.65	9.85	9 Kn (min)
2	Marshal flow, mm	3.33	2.54	2 – 4
3	Percent air voids in Mineral Aggregate	13.65	14.25	13 – 15
4	Voids in Compacted Mix	3.87	4.61	3 – 6
5	Percent Voids filled with Bitumen	70.21	71.51	65 - 75
6	Density, g/cc	2.25	2.26	--

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Job No.: CACE/BBMP/MSV/W.No.14/2021-22 Date: 13.04.2022

TEST REPORT ON STABILITY OF MIX

Client	:	**Assistant Executive Engineer,** Dasarahalli Sub Division, BBMP, Bangalore.
Agency	:	M/S **M S V Construction Company,** Contractor, Bangalore.
Name of the Work	:	Entrustment of work "Asphalting to roads at Munikondappa Layout and Surrounding area in ward no.14 Bagalagunte", BBMP, Bangalore.
Source of location	:	Hot mix Plant, Bangalore
Type of Mix	:	Bituminous Concrete
Date of Testing	:	13.04.2022

The results of the tests conducted on the Bituminous Concrete mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshal Stability, Kn	9.48	9.95	9 Kn (min)
2	Marshal flow, mm	3.12	2.97	2 – 4
3	Percent air voids in Mineral Aggregate	13.22	14.35	13 – 15
4	Voids in Compacted Mix	3.63	4.66	3 – 6
5	Percent Voids filled with Bitumen	69.29	68.25	65 - 75
6	Density, g/cc	2.25	2.25	--

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Job No.: CACE/BBMP/MSV/W.No.14/2021-22 Date: 18.04.2022

TEST REPORT ON STABILITY OF MIX

Client	:	**Assistant Executive Engineer,** Dasarahalli Sub Division, BBMP, Bangalore.
Agency	:	M/S **M S V Construction Company,** Contractor, Bangalore.
Name of the Work	:	Entrustment of work "Asphalting to roads at Munikondappa Layout and Surrounding area in ward no.14 Bagalagunte", BBMP, Bangalore.
Source of location	:	Hot mix Plant, Bangalore
Type of Mix	:	Bituminous Concrete
Date of Testing	:	18.04.2022

The results of the tests conducted on the Bituminous Concrete mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshal Stability, Kn	9.67	9.54	9 Kn (min)
2	Marshal flow, mm	3.46	2.58	2 – 4
3	Percent air voids in Mineral Aggregate	13.78	14.45	13 – 15
4	Voids in Compacted Mix	3.12	4.52	3 – 6
5	Percent Voids filled with Bitumen	70.25	71.61	65 - 75
6	Density, g/cc	2.21	2.23	--

Note:

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Date: 18.04.2022

Job No.: CACE/BBMP/MSV/W.No.14/2021-22

TEST REPORT ON STABILITY OF MIX

Client	:	**Assistant Executive Engineer,** Dasarahalli Sub Division, BBMP, Bangalore.
Agency	:	M/S **M S V Construction Company,** Contractor, Bangalore.
Name of the Work	:	Entrustment of work "Asphalting to roads at Munikondappa Layout and Surrounding area in ward no.14 Bagalagunte", BBMP, Bangalore.
Source of location	:	Hot mix Plant, Bangalore
Type of Mix	:	Bituminous Concrete
Date of Testing	:	18.04.2022

The results of the tests conducted on the Bituminous Concrete mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshal Stability, Kn	9.67	9.54	9 Kn (min)
2	Marshal flow, mm	3.46	2.58	2 – 4
3	Percent air voids in Mineral Aggregate	13.78	14.45	13 – 15
4	Voids in Compacted Mix	3.12	4.52	3 – 6
5	Percent Voids filled with Bitumen	70.25	71.61	65 - 75
6	Density, g/cc	2.21	2.23	--

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Job No.: CACE/BBMP/MSV/W.No.14/2021-22 Date: 18.04.2022

TEST REPORT ON STABILITY OF MIX

Client	:	**Assistant Executive Engineer,** Dasarahalli Sub Division, BBMP, Bangalore.
Agency	:	M/S **M S V Construction Company,** Contractor, Bangalore.
Name of the Work	:	Entrustment of work "Asphalting to roads at Munikondappa Layout and Surrounding area in ward no.14 Bagalagunte", BBMP, Bangalore.
Source of location	:	Hot mix Plant, Bangalore
Type of Mix	:	Bituminous Concrete
Date of Testing	:	18.04.2022

The results of the tests conducted on the Bituminous Concrete mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshal Stability, Kn	9.75	10.15	9 Kn (min)
2	Marshal flow, mm	3.25	3.5	2 – 4
3	Percent air voids in Mineral Aggregate	14.1	14.25	13 – 15
4	Voids in Compacted Mix	4.1	4.12	3 – 6
5	Percent Voids filled with Bitumen	67.29	69.12	65 - 75
6	Density, g/cc	2.21	2.24	--

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Job No.: CACE/BBMP/MSV/W.No.14/2021-22

Date: 19.04.2022

TEST REPORT ON STABILITY OF MIX

Client	:	**Assistant Executive Engineer,** Dasarahalli Sub Division, BBMP, Bangalore.
Agency	:	M/S **M S V Construction Company,** Contractor, Bangalore.
Name of the Work	:	Entrustment of work "Asphalting to roads at Munikondappa Layout and Surrounding area in ward no.14 Bagalagunte", BBMP, Bangalore.
Source of location	:	Hot mix Plant, Bangalore
Type of Mix	:	Bituminous Concrete
Date of Testing	:	19.04.2022

The results of the tests conducted on the Bituminous Concrete mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshal Stability, Kn	10.25	9.58	9 Kn (min)
2	Marshal flow, mm	3.67	2.45	2 – 4
3	Percent air voids in Mineral Aggregate	13.46	14.52	13 – 15
4	Voids in Compacted Mix	3.78	4.61	3 – 6
5	Percent Voids filled with Bitumen	70.12	71.15	65 - 75
6	Density, g/cc	2.25	2.26	--

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Job No.: CACE/BBMP/MSV/W.No.14/2021-22 Date: 19.04.2022

TEST REPORT ON STABILITY OF MIX

Client	:	**Assistant Executive Engineer,** Dasarahalli Sub Division, BBMP, Bangalore.
Agency	:	M/S **M S V Construction Company,** Contractor, Bangalore.
Name of the Work	:	Entrustment of work "Asphalting to roads at Munikondappa Layout and Surrounding area in ward no.14 Bagalagunte", BBMP, Bangalore.
Source of location	:	Hot mix Plant, Bangalore
Type of Mix	:	Bituminous Concrete
Date of Testing	:	19.04.2022

The results of the tests conducted on the Bituminous Concrete mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshal Stability, Kn	9.44	10.82	9 Kn (min)
2	Marshal flow, mm	2.69	2.65	2 – 4
3	Percent air voids in Mineral Aggregate	13.45	14.52	13 – 15
4	Voids in Compacted Mix	3.84	4.15	3 – 6
5	Percent Voids filled with Bitumen	69.29	70.12	65 - 75
6	Density, g/cc	2.25	2.26	--

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Job No.: CACE/BBMP/MSV/W.No.14/2021-22

Date: 20.04.2022

TEST REPORT ON STABILITY OF MIX

Client	:	**Assistant Executive Engineer,** Dasarahalli Sub Division, BBMP, Bangalore.
Agency	:	M/S **M S V Construction Company,** Contractor, Bangalore.
Name of the Work	:	Entrustment of work "Asphalting to roads at Munikondappa Layout and Surrounding area in ward no.14 Bagalagunte", BBMP, Bangalore.
Source of location	:	Hot mix Plant, Bangalore
Type of Mix	:	Bituminous Concrete
Date of Testing	:	20.04.2022

The results of the tests conducted on the Bituminous Concrete mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshal Stability, Kn	9.63	10.87	9 Kn (min)
2	Marshal flow, mm	2.79	2.96	2 – 4
3	Percent air voids in Mineral Aggregate	13.62	14.57	13 – 15
4	Voids in Compacted Mix	3.83	4.20	3 – 6
5	Percent Voids filled with Bitumen	69.43	70.17	65 - 75
6	Density, g/cc	2.25	2.26	--

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Date: 20.04.2022

Job No.: CACE/BBMP/MSV/W.No.14/2021-22

TEST REPORT ON STABILITY OF MIX

Client	:	**Assistant Executive Engineer,** Dasarahalli Sub Division, BBMP, Bangalore.
Agency	:	M/S **M S V Construction Company,** Contractor, Bangalore.
Name of the Work	:	Entrustment of work "Asphalting to roads at Munikondappa Layout and Surrounding area in ward no.14 Bagalagunte", BBMP, Bangalore.
Source of location	:	Hot mix Plant, Bangalore
Type of Mix	:	Bituminous Concrete
Date of Testing	:	20.04.2022

The results of the tests conducted on the Bituminous Concrete mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshal Stability, Kn	10.55	9.91	9 Kn (min)
2	Marshal flow, mm	2.81	3.25	2 – 4
3	Percent air voids in Mineral Aggregate	13.88	14.12	13 – 15
4	Voids in Compacted Mix	4.12	3.25	3 – 6
5	Percent Voids filled with Bitumen	70.81	68.93	65 - 75
6	Density, g/cc	2.25	2.26	--

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Job No.: CACE/BBMP/MSV/W.No.14/2021-22 Date : 12.04.2022

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE

AASHTO T 164 & AASHTO T 30

CLIENT	Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.
AGENCY	M/S M S V Construction Company, Contractor, Bangalore.
NAME OF THE WORK	Entrustment of work "Asphalting to roads at Munikondappa Layout and Surrounding area in ward no.14 Bagalagunte", BBMP, Bangalore.
SAMPLE ID	Hot Mix Plant, Bangalore
DATE OF TESTING	12.04.2022

BITUMEN CONTENT DETERMINATION

Description	Sample 1	Sample 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	473	473
3. Weight of Asphalt and Mineral matter Extracted, g	27	27
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g	-	-
6. Weight of Bitumen Extracted, g. (corrected)	27	27
7. Bitumen content in %	5.40	5.40
8. Average	5.40	

GRADATION AFTER EXTRACTION

SIEVE SIZE mm	Test 1 Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	Requirement as per MORTH table 500.17
19	0	0	0	100	100
13.2	14.8	14.8	3.1	96.9	90 - 100
9.5	65.8	80.6	17.0	83.0	70 - 88
4.75	90.3	170.9	36.1	63.9	53 - 71
2.36	46.2	217.1	45.9	54.1	42 - 58
1.18	35.8	252.9	53.5	46.5	34 - 48
0.600	55.3	308.2	65.2	34.8	26 - 38
0.300	42.8	351	74.2	25.8	18 - 28
0.150	34.9	385.9	81.6	18.4	12 - 20
0.075	42.8	428.7	90.6	9.4	4 - 10

SIEVE SIZE mm	Test 2 Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	Requirement as per MORTH table 500.17
19	0	0	0	100	100
13.2	15.8	15.8	3.3	96.7	90 - 100
9.5	66.2	82	17.3	82.7	70 - 88
4.75	92.8	174.8	37.0	63.0	53 - 71
2.36	45.3	220.1	46.5	53.5	42 - 58
1.18	48.2	268.3	56.7	43.3	34 - 48
0.600	56.3	324.6	68.6	31.4	26 - 38
0.300	45.8	370.4	78.3	21.7	18 - 28
0.150	37.9	408.3	86.3	13.7	12 - 20
0.075	32.6	440.9	93.2	6.8	4 - 10

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Job No.: CACE/BBMP/MSV/W.No.14/2021-22 Date : 12.04.2022

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE

AASHTO T 164 & AASHTO T 30

CLIENT	**Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.**
AGENCY	**M/S M S V Construction Company, Contractor, Bangalore.**
NAME OF THE WORK	Entrustment of work "Asphalting to roads at Munikondappa Layout and Surrounding area in ward no.14 Bagalagunte", BBMP, Bangalore.
SAMPLE ID	Hot Mix Plant, Bangalore
DATE OF TESTING	12.04.2022

BITUMEN CONTENT DETERMINATION

Description	Sample 1	Sample 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	472.5	472
3. Weight of Asphalt and Mineral matter Extracted, g	27.5	28
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g	-	-
6. Weight of Bitumen Extracted, g. (corrected)	27.5	28
7. Bitumen content in %	5.50	5.60
8. Average	**5.55**	

GRADATION AFTER EXTRACTION

SIEVE SIZE mm	Test 1 Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	Requirement as per MORTH table 500.17
19	0	0	0	100	100
13.2	13.8	13.8	2.9	97.1	90 - 100
9.5	68.9	82.7	17.5	82.5	70 - 88
4.75	92.6	175.3	37.1	62.9	53 - 71
2.36	42.5	217.8	46.1	53.9	42 - 58
1.18	36.8	254.6	53.9	46.1	34 - 48
0.600	50.9	305.5	64.7	35.3	26 - 38
0.300	46.3	351.8	74.5	25.5	18 - 28
0.150	35.8	387.6	82.0	18.0	12 - 20
0.075	46.9	434.5	92.0	8.0	4 - 10

SIEVE SIZE mm	Test 2 Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	Requirement as per MORTH table 500.17
19	0	0	0	100	100
13.2	14.9	14.9	3.2	96.8	90 - 100
9.5	62.8	77.7	16.5	83.5	70 - 88
4.75	90.9	168.6	35.7	64.3	53 - 71
2.36	46.5	215.1	45.6	54.4	42 - 58
1.18	43.8	258.9	54.9	45.1	34 - 48
0.600	52.4	311.3	66.0	34.0	26 - 38
0.300	49.3	360.6	76.4	23.6	18 - 28
0.150	35.6	396.2	83.9	16.1	12 - 20
0.075	40.8	437	92.6	7.4	4 - 10

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Job No.: CACE/BBMP/MSV/W.No.14/2021-22 Date : 12.04.2022

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE

AASHTO T 164 & AASHTO T 30

CLIENT	**Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.**
AGENCY	**M/S M S V Construction Company, Contractor, Bangalore.**
NAME OF THE WORK	Entrustment of work "Asphalting to roads at Munikondappa Layout and Surrounding area in ward no.14 Bagalagunte", BBMP, Bangalore.
SAMPLE ID	Hot Mix Plant, Bangalore
DATE OF TESTING	12.04.2022

BITUMEN CONTENT DETERMINATION

Description	Sample 1	Sample 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	472.5	472
3. Weight of Asphalt and Mineral matter Extracted, g	27.5	28
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g	-	-
6. Weight of Bitumen Extracted, g. (corrected)	27.5	28
7. Bitumen content in %	5.50	5.60
8. Average	**5.55**	

GRADATION AFTER EXTRACTION

SIEVE SIZE mm	Test 1				Requirement as per MORTH table 500.17
	Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	
19	0	0	0	100	100
13.2	13.8	13.8	2.9	97.1	90 - 100
9.5	68.9	82.7	17.5	82.5	70 - 88
4.75	92.6	175.3	37.1	62.9	53 - 71
2.36	42.5	217.8	46.1	53.9	42 - 58
1.18	36.8	254.6	53.9	46.1	34 - 48
0.600	50.9	305.5	64.7	35.3	26 - 38
0.300	46.3	351.8	74.5	25.5	18 - 28
0.150	35.8	387.6	82.0	18.0	12 - 20
0.075	46.9	434.5	92.0	8.0	4 - 10

SIEVE SIZE mm	Test 2				Requirement as per MORTH table 500.17
	Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	
19	0	0	0	100	100
13.2	14.9	14.9	3.2	96.8	90 - 100
9.5	62.8	77.7	16.5	83.5	70 - 88
4.75	90.9	168.6	35.7	64.3	53 - 71
2.36	46.5	215.1	45.6	54.4	42 - 58
1.18	43.8	258.9	54.9	45.1	34 - 48
0.600	52.4	311.3	66.0	34.0	26 - 38
0.300	49.3	360.6	76.4	23.6	18 - 28
0.150	35.6	396.2	83.9	16.1	12 - 20
0.075	40.8	437	92.6	7.4	4 - 10

Note:

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For CIVIL AIM CONSULTANTS & ENGINEERS

Authorised Signatory

No. 01, Satvika Nilaya, Opp. Widia Poorna Prajna School,
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CIVIL AIM CONSULTANTS & ENGINEERS

(Building Geo-Tech & Highway Materials Testing Laboratory)

An ISO 9001-2015 Certified Company

NABL Accredited As Per ISO/IEC 17025:2017 Laboratory

Job No.: CACE/BBMP/MSV/W.No.14/2021-22 Date : 13.04.2022

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE

AASHTO T 164 & AASHTO T 30

CLIENT	Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.
AGENCY	**M/S M S V Construction Company, Contractor, Bangalore.**
NAME OF THE WORK	Entrustment of work "Asphalting to roads at Munikondappa Layout and Surrounding area in ward no.14 Bagalagunte", BBMP, Bangalore.
SAMPLE ID	Hot Mix Plant, Bangalore
DATE OF TESTING	13.04.2022

BITUMEN CONTENT DETERMINATION

Description	Sample 1	Sample 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	472	473
3. Weight of Asphalt and Mineral matter Extracted, g	28	27
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g	-	-
6. Weight of Bitumen Extracted, g. (corrected)	28	27
7. Bitumen content in %	5.60	5.40
8. Average	**5.50**	

GRADATION AFTER EXTRACTION

SIEVE SIZE mm	Test 1 Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	Requirement as per MORTH table 500.17
19	0	0	0	100	100
13.2	13.3	13.3	2.8	97.2	90 - 100
9.5	65.6	78.9	16.7	83.3	70 - 88
4.75	90.5	169.4	35.9	64.1	53 - 71
2.36	46.5	215.9	45.7	54.3	42 - 58
1.18	36	251.9	53.4	46.6	34 - 48
0.600	55.9	307.8	65.2	34.8	26 - 38
0.300	43	350.8	74.3	25.7	18 - 28
0.150	35.1	385.9	81.8	18.2	12 - 20
0.075	43.1	429	90.9	9.1	4 - 10

SIEVE SIZE mm	Test 2 Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	Requirement as per MORTH table 500.17
19	0	0	0	100	100
13.2	18.2	18.2	3.8	96.2	90 - 100
9.5	66	84.2	17.8	82.2	70 - 88
4.75	92.6	176.8	37.4	62.6	53 - 71
2.36	45.1	221.9	46.9	53.1	42 - 58
1.18	48.1	270	57.1	42.9	34 - 48
0.600	56.1	326.1	68.9	31.1	26 - 38
0.300	45.6	371.7	78.6	21.4	18 - 28
0.150	38.5	410.2	86.7	13.3	12 - 20
0.075	31.6	441.8	93.4	6.6	4 - 10

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For CIVIL AIM CONSULTANTS & ENGINEERS

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Job No.: CACE/BBMP/MSV/W.No.14/2021-22 Date : 13.04.2022

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE

AASHTO T 164 & AASHTO T 30

CLIENT	**Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.**
AGENCY	**M/S M S V Construction Company, Contractor, Bangalore.**
NAME OF THE WORK	Entrustment of work "Asphalting to roads at Munikondappa Layout and Surrounding area in ward no.14 Bagalagunte", BBMP, Bangalore.
SAMPLE ID	Hot Mix Plant, Bangalore
DATE OF TESTING	13.04.2022

BITUMEN CONTENT DETERMINATION

Description	Sample 1	Sample 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	472	472
3. Weight of Asphalt and Mineral matter Extracted, g	28	28
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g	-	-
6. Weight of Bitumen Extracted, g. (corrected)	28	28
7. Bitumen content in %	5.60	5.60
8. Average	**5.60**	

GRADATION AFTER EXTRACTION

SIEVE SIZE mm	Test 1 Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	Requirement as per MORTH table 500.17
19	0	0	0	100	100
13.2	19.2	19.2	4.1	95.9	90 - 100
9.5	69.1	88.3	18.7	81.3	70 - 88
4.75	92.1	180.4	38.2	61.8	53 - 71
2.36	42.2	222.6	47.2	52.8	42 - 58
1.18	37	259.6	55.0	45.0	34 - 48
0.600	51.1	310.7	65.8	34.2	26 - 38
0.300	46.5	357.2	75.7	24.3	18 - 28
0.150	35.1	392.3	83.1	16.9	12 - 20
0.075	47.1	439.4	93.1	6.9	4 - 10

SIEVE SIZE mm	Test 2 Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	Requirement as per MORTH table 500.17
19	0	0	0	100	100
13.2	15.8	15.8	3.3	96.7	90 - 100
9.5	62.5	78.3	16.6	83.4	70 - 88
4.75	91.1	169.4	35.9	64.1	53 - 71
2.36	46.7	216.1	45.8	54.2	42 - 58
1.18	43.5	259.6	55.0	45.0	34 - 48
0.600	52.1	311.7	66.0	34.0	26 - 38
0.300	49.1	360.8	76.4	23.6	18 - 28
0.150	35.2	396	83.9	16.1	12 - 20
0.075	40.5	436.5	92.5		4 - 10

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Job No.: CACE/BBMP/MSV/W.No.14/2021-22 Date : 18.04.2022

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE

AASHTO T 164 & AASHTO T 30

CLIENT	**Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.**
AGENCY	**M/S M S V Construction Company, Contractor, Bangalore.**
NAME OF THE WORK	Entrustment of work "Asphalting to roads at Munikondappa Layout and Surrounding area in ward no.14 Bagalagunte", BBMP, Bangalore.
SAMPLE ID	Hot Mix Plant, Bangalore
DATE OF TESTING	18.04.2022

BITUMEN CONTENT DETERMINATION

Description	Sample 1	Sample 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	472.5	473
3. Weight of Asphalt and Mineral matter Extracted, g	27.5	27
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g	-	-
6. Weight of Bitumen Extracted, g. (corrected)	27.5	27
7. Bitumen content in %	5.50	5.40
8. Average	**5.45**	

GRADATION AFTER EXTRACTION

SIEVE SIZE mm	Test 1 Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	Requirement as per MORTH table 500.17
19	0	0	0	100	100
13.2	17.7	17.7	3.7	96.3	90 - 100
9.5	66.2	83.9	17.8	82.2	70 - 88
4.75	91.3	175.2	37.1	62.9	53 - 71
2.36	45.9	221.1	46.8	53.2	42 - 58
1.18	36.1	257.2	54.4	45.6	34 - 48
0.600	55.9	313.1	66.3	33.7	26 - 38
0.300	43.1	356.2	75.4	24.6	18 - 28
0.150	35.1	391.3	82.8	17.2	12 - 20
0.075	41.5	432.8	91.6	8.4	4 - 10

SIEVE SIZE mm	Test 2 Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	Requirement as per MORTH table 500.17
19	0	0	0	100	100
13.2	15.8	15.8	3.3	96.7	90 - 100
9.5	65.9	81.7	17.3	82.7	70 - 88
4.75	92.5	174.2	36.8	63.2	53 - 71
2.36	45.9	220.1	46.5	53.5	42 - 58
1.18	48.9	269	56.9	43.1	34 - 48
0.600	56.9	325.9	68.9	31.1	26 - 38
0.300	47.1	373	78.9	21.1	18 - 28
0.150	38.1	411.1	86.9	13.1	12 - 20
0.075	31.5	442.6	93.6	6.4	4 - 10

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AASHTO T 164 & AASHTO T 30

CLIENT	**Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.**
AGENCY	**M/S M S V Construction Company, Contractor, Bangalore.**
NAME OF THE WORK	Entrustment of work "Asphalting to roads at Munikondappa Layout and Surrounding area in ward no.14 Bagalagunte", BBMP, Bangalore.
SAMPLE ID	Hot Mix Plant, Bangalore
DATE OF TESTING	18.04.2022

BITUMEN CONTENT DETERMINATION

Description	Sample 1	Sample 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	472.5	472.5
3. Weight of Asphalt and Mineral matter Extracted, g	27.5	27.5
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g	-	-
6. Weight of Bitumen Extracted, g. (corrected)	27.5	27.5
7. Bitumen content in %	5.50	5.50
8. Average	**5.50**	

GRADATION AFTER EXTRACTION

SIEVE SIZE mm	Test 1				Requirement as per MORTH table 500.17
	Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	
19	0	0	0	100	100
13.2	15.3	15.3	3.2	96.8	90 - 100
9.5	69.1	84.4	17.9	82.1	70 - 88
4.75	92.2	176.6	37.4	62.6	53 - 71
2.36	42.2	218.8	46.3	53.7	42 - 58
1.18	36.6	255.4	54.1	45.9	34 - 48
0.600	50	305.4	64.6	35.4	26 - 38
0.300	46.6	352	74.5	25.5	18 - 28
0.150	35.5	387.5	82.0	18.0	12 - 20
0.075	46.5	434	91.9	8.1	4 - 10

SIEVE SIZE mm	Test 2				Requirement as per MORTH table 500.17
	Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	
19	0	0	0	100	100
13.2	17.6	17.6	3.7	96.3	90 - 100
9.5	62.2	79.8	16.9	83.1	70 - 88
4.75	89.9	169.7	35.9	64.1	53 - 71
2.36	46.5	216.2	45.8	54.2	42 - 58
1.18	43.5	259.7	55.0	45.0	34 - 48
0.600	52.2	311.9	66.0	34.0	26 - 38
0.300	49.9	361.8	76.6	23.4	18 - 28
0.150	35.5	397.3	84.1	15.9	12 - 20
0.075	40.2	437.5	92.6	7.4	4 - 10

For CIVIL AIM CONSULTANTS & ENGINEERS

Authorised Signatory

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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE

AASHTO T 164 & AASHTO T 30

CLIENT	Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.
AGENCY	M/S M S V Construction Company, Contractor, Bangalore.
NAME OF THE WORK	Entrustment of work "Asphalting to roads at Munikondappa Layout and Surrounding area in ward no.14 Bagalagunte", BBMP, Bangalore.
SAMPLE ID	Hot Mix Plant, Bangalore
DATE OF TESTING	19.04.2022

BITUMEN CONTENT DETERMINATION

Description	Sample 1	Sample 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	472.5	473
3. Weight of Asphalt and Mineral matter Extracted, g	27.5	27
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g	-	-
6. Weight of Bitumen Extracted, g. (corrected)	27.5	27
7. Bitumen content in %	5.50	5.40
8. Average	5.45	

GRADATION AFTER EXTRACTION

SIEVE SIZE mm	Test 1				Requirement as per MORTH table 500.17
	Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	
19	0	0	0	100	100
13.2	16.8	16.8	3.6	96.4	90 - 100
9.5	64.9	81.7	17.3	82.7	70 - 88
4.75	91.3	173	36.6	63.4	53 - 71
2.36	48.2	221.2	46.8	53.2	42 - 58
1.18	36.8	258	54.6	45.4	34 - 48
0.600	57.6	315.6	66.8	33.2	26 - 38
0.300	43.3	358.9	76.0	24.0	18 - 28
0.150	35.9	394.8	83.6	16.4	12 - 20
0.075	40.1	434.9	92.0	8.0	4 - 10

SIEVE SIZE mm	Test 2				Requirement as per MORTH table 500.17
	Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	
19	0	0	0	100	100
13.2	15.2	15.2	3.2	96.8	90 - 100
9.5	65.2	80.4	17.0	83.0	70 - 88
4.75	92.1	172.5	36.5	63.5	53 - 71
2.36	45.1	217.6	46.0	54.0	42 - 58
1.18	48.9	266.5	56.3	43.7	34 - 48
0.600	56	322.5	68.2	31.8	26 - 38
0.300	44.8	367.3	77.7	22.3	18 - 28
0.150	37.1	404.4	85.5	14.5	12 - 20
0.075	31.6	436	92.2	7.8	4 - 10

Note:

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For CIVIL AIM CONSULTANTS & ENGINEERS

Authorised Signatory

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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE

AASHTO T 164 & AASHTO T 30

CLIENT	**Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.**
AGENCY	**M/S M S V Construction Company, Contractor, Bangalore.**
NAME OF THE WORK	Entrustment of work "Asphalting to roads at Munikondappa Layout and Surrounding area in ward no.14 Bagalagunte", BBMP, Bangalore.
SAMPLE ID	Hot Mix Plant, Bangalore
DATE OF TESTING	19.04.2022

BITUMEN CONTENT DETERMINATION

Description	Sample 1	Sample 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	472	472.5
3. Weight of Asphalt and Mineral matter Extracted, g	28	27.5
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g	-	-
6. Weight of Bitumen Extracted, g. (corrected)	28	27.5
7. Bitumen content in %	5.60	5.50
8. Average	**5.55**	

GRADATION AFTER EXTRACTION

SIEVE SIZE mm	Test 1 Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	Requirement as per MORTH table 500.17
19	0	0	0	100	100
13.2	16.7	16.7	3.5	96.5	90 - 100
9.5	66.6	83.3	17.6	82.4	70 - 88
4.75	92.2	175.5	37.2	62.8	53 - 71
2.36	42.9	218.4	46.3	53.7	42 - 58
1.18	37.5	255.9	54.2	45.8	34 - 48
0.600	51.9	307.8	65.2	34.8	26 - 38
0.300	46.6	354.4	75.1	24.9	18 - 28
0.150	35.5	389.9	82.6	17.4	12 - 20
0.075	46.6	436.5	92.5	7.5	4 - 10

SIEVE SIZE mm	Test 2 Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	Requirement as per MORTH table 500.17
19	0	0	0	100	100
13.2	15.2	15.2	3.2	96.8	90 - 100
9.5	62.1	77.3	16.4	83.6	70 - 88
4.75	91.9	169.2	35.8	64.2	53 - 71
2.36	46	215.2	45.5	54.5	42 - 58
1.18	43.1	258.3	54.7	45.3	34 - 48
0.600	51.1	309.4	65.5	34.5	26 - 38
0.300	48.1	357.5	75.7	24.3	18 - 28
0.150	34.6	392.1	83.0	17.0	12 - 20
0.075	41.8	433.9	91.8	8.2	4 - 10

Note:

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For CIVIL AIM CONSULTANTS & ENGINEERS

Authorised Signatory

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Job No.: CACE/BBMP/MSV/W.No.14/2021-22 Date : 20.04.2022

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE

AASHTO T 164 & AASHTO T 30

CLIENT	Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.
AGENCY	M/S M S V Construction Company, Contractor, Bangalore.
NAME OF THE WORK	Entrustment of work "Asphalting to roads at Munikondappa Layout and Surrounding area in ward no.14 Bagalagunte", BBMP, Bangalore.
SAMPLE ID	Hot Mix Plant, Bangalore
DATE OF TESTING	20.04.2022

BITUMEN CONTENT DETERMINATION

Description	Sample 1	Sample 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	472.5	472
3. Weight of Asphalt and Mineral matter Extracted, g	27.5	28
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g	-	-
6. Weight of Bitumen Extracted, g. (corrected)	27.5	28
7. Bitumen content in %	5.50	5.60
8. Average	5.55	

GRADATION AFTER EXTRACTION

SIEVE SIZE mm	Test 1 Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	Requirement as per MORTH table 500.17
19	0	0	0	100	100
13.2	14	14	3.0	97.0	90 - 100
9.5	69.3	83.3	17.6	82.4	70 - 88
4.75	93.9	177.2	37.5	62.5	53 - 71
2.36	43.5	220.7	46.7	53.3	42 - 58
1.18	38.2	258.9	54.8	45.2	34 - 48
0.600	39.2	298.1	63.1	36.9	26 - 38
0.300	46.3	344.4	72.9	27.1	18 - 28
0.150	36.2	380.6	80.6	19.4	12 - 20
0.075	46.9	427.5	90.5	9.5	4 - 10

SIEVE SIZE mm	Test 2 Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	Requirement as per MORTH table 500.17
19	0	0	0	100	100
13.2	14.6	14.6	3.1	96.9	90 - 100
9.5	61.8	76.4	16.2	83.8	70 - 88
4.75	91.1	167.5	35.5	64.5	53 - 71
2.36	46.3	213.8	45.3	54.7	42 - 58
1.18	43.1	256.9	54.4	45.6	34 - 48
0.600	52.1	309	65.5	34.5	26 - 38
0.300	49.8	358.8	76.0	24.0	18 - 28
0.150	35.8	394.6	83.6	16.4	12 - 20
0.075	40.2	434.8	92.1	7.9	4 - 10

CIVIL AIM CONSULTANTS & ENGINEERS

Authorised Signatory

Note:

- This test report should not be reproduced except in full, without written approval of the laboratory.
- The results indicated above are based on the tests carried out on the samples collected at the site.
- Any Query regarding the report must be reported within 30 days from the date of testing.

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